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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/980,954	02/15/2002	Akira Kaji	K0448/7012	3440
23628	7590	03/07/2006	EXAMINER	
WOLF GREENFIELD & SACKS, PC FEDERAL RESERVE PLAZA 600 ATLANTIC AVENUE BOSTON, MA 02210-2206			STEADMAN, DAVID J	
			ART UNIT	PAPER NUMBER
			1656	

DATE MAILED: 03/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/980,954

Applicant(s)

KAJI ET AL.

Examiner

David J. Steadman

Art Unit

1656

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 52-59 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 52-59 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of the Application

- [1] The Art Unit location of your application in the USPTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Art Unit 1656.
- [2] Claims 1 and 52-59 are pending in the application.
- [3] Applicant's amendment to the claims, filed on 11/23/2005, is acknowledged. This listing of the claims replaces all prior versions and listings of the claims.
- [4] Applicant's arguments filed on 11/23/2005 have been fully considered and are deemed to be persuasive to overcome at least one of the rejections and/or objections previously applied. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn.
- [5] The text of those sections of Title 35, U.S. Code not included in the instant action can be found in a prior Office action.

Claim Rejections - 35 USC § 112, Second Paragraph

- [6] Claims 1 and 52-53 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 (claims 52-53 dependent therefrom) is confusing in the recitation of "comprising steps of" (underline added for emphasis) because the method recites only a single method step, *i.e.*, method step a). Because the claim recites "steps" and recites a

step “a),” it appears that at least one other method step is intended as being included in the claim and thus, the claim appears to be incomplete. It is suggested that applicant clarify the meaning of the claim.

Claim Rejections - 35 USC § 112, First Paragraph

[7] The new matter rejection of claims 57-59 under 35 U.S.C. 112, first paragraph, is maintained for the reasons of record and the reasons stated below. The rejection was fully explained in a prior Office action.

RESPONSE TO ARGUMENT: As support for claim 57, applicant points to p. 26, lines 3-8 of the specification. However, this disclosure fails to support the limitations of claim 57 (claims 58-59 dependent therefrom) as the cited disclosure states specific “species” of inhibitor screening methods, which fail to support the “genus” of binding assays of claim 57. Furthermore, it is noted that cited support is limited to inhibitor assays, not binding assays in general.

[8] The scope of enablement rejection of claims 1 and 52-59 under 35 U.S.C. 112, first paragraph, is maintained for the reasons of record and the reasons stated below. The rejection was fully explained in a prior Office action.

RESPONSE TO ARGUMENT: Applicant argues the specification identifies residues 110, 129, and 132 of SEQ ID NO:1 as RRF active site residues, which is corroborated by Figure 3, disclosed working examples of mutational studies, and post-filing references. According to applicant, the disclosure of the structural coordinates of

RRF of Table 8 enables a skilled artisan to practice the full scope of the claimed invention using only routine experimentation.

Applicant's argument is not found persuasive. The examiner acknowledges the specification's disclosure of residues 110, 129, and 132 (of SEQ ID NO:1) as likely being active site residues of the RRF having structural coordinates of Table 8. However, the claims are so broad as to encompass a method for identifying compounds that bind to *any portion or part of RRF* having structural coordinates of Table 8. While the specification suggests that residues 110, 129, and 132 of SEQ ID NO:1 are RRF active site residues, the specification fails to provide a working example of the claimed method and further fails to provide guidance for using the 3-D structure of RRF having structural coordinates of Table 8 to "design or select" compounds that bind to *any portion or part of RRF*. As noted in a prior Office action, while computer programs for predicting binding sites on a given protein 3-D structure exist, there is no reliable measure of accuracy for such programs, which are likely to select multiple sites and it is highly unpredictable as to whether such binding sites are biologically relevant, which is undisputed by applicant. Consequently, there is no expectation that compounds that bind to such sites *in silico* would also bind to such sites *in vitro* or *in vivo*. While *in silico* methods of screening compounds that bind to a protein's identified active site were known at the time of the invention, it was not routine in the art to screen for compounds that bind to *any portion or part* of a protein as encompassed by the instant claims. In view of the broad scope of the claims, the high level of unpredictability, the lack of guidance and working examples, and the amount of experimentation required, the

examiner maintains that undue experimentation is required to make the full scope of the claimed invention.

Claim Rejections - 35 USC § 103

[9] The rejection of claims 1 and 52-59 under 35 U.S.C. 103(a) as being unpatentable over Wilson et al. in view In re Gulack 217 USPQ 401 (Fed. Cir. 1983) is maintained for the reasons of record and the reasons stated below. The rejection was fully explained in a prior Office action.

RESPONSE TO ARGUMENT: Applicant argues the examiner's conclusion that the structural coordinates of Table 8 are non-functional descriptive material is incorrect and the examiner has erroneously applied the findings of *In re Gulack*. Applicant argues a functional relationship exists between the structural coordinates of Table 8 and the "other elements" of the claimed invention, namely the method by which the structural coordinates are used to "design or select" compounds. Applicant argues the purpose of the data of Table 8 is not to impose a change in processing steps, but provides a description of a 3-D structure of an RRF protein. According to applicant, because the structural coordinates are used in the method, the data is functional because the claimed method cannot be practiced without it. Applicant further argues that because the method uses the structural coordinates of Table 8, the claimed invention does not represent the use of a "known comparator for its known purpose to compare data sets." Applicant argues the examiner did not fully consider the invention

“as a whole” and therefore did not appreciate the functional relationship between the data of Table 8 and the “remaining elements” of the invention.

Applicants' argument is not found persuasive. Contrary to applicant's assertion, in accordance with the holding of *Gulack* and MPEP § 2141.02, the examiner has fully considered the invention “as a whole.” The claims are drawn to methods of using a 3-D structure of an RRF protein to “design or select” an RRF binding compound, wherein the 3-D structure is “defined” by the data of Table 8. According to the specification, the 3-D structure is generated using a computer with the data of Table 8 stored thereon and an algorithm that processes the data into said 3-D structure. Applicant's attention is directed to Annex 3 of the Trilateral Project WM4 Report on comparative study on protein 3-dimensional (3-D) structure related claims (cited in prior Office actions), relating to claims drawn to *in silico* methods using a 3-D protein structure (p. 72):

The key factor in analyzing the obviousness of these claims over the prior art is the determination that the computer algorithm used to identify compounds that can potentially bind protein P is a known algorithm and is unmodified. If the difference between the prior art and the claimed invention as a whole is limited to descriptive material stored on or employed by a machine, it is necessary to determine whether the descriptive material is functional descriptive material or nonfunctional descriptive material. Data, which are fed into a known algorithm whose purpose is to compare or modify those data using a series of processing steps, do not impose a change in the processing steps and are thus nonfunctional descriptive material. A method of using a known comparator for its known purpose to compare data sets does not become nonobvious merely because new data becomes available for analysis. Nonfunctional descriptive material cannot render nonobvious an invention that would have otherwise been obvious.

In this case, the difference between the reference of Wilson et al. and the claimed invention is limited to the data of Table 8. Thus, the examiner must determine whether the data of Table 8 is functional or non-functional descriptive material. According to the specification, the method uses a known algorithm and the data of Table 8 do not impose

a change in the function of the computer, which is acknowledged by applicant who states, "[t]he purpose of the data in Table 8 is not *per se* to impose a change in processing steps; rather, the data provides a description, when a proper algorithm is used, of the three-dimensional structure of the RRF" (instant response at p. 13, second full paragraph). As such, the data of Table 8 are non-functional descriptive material. While applicant may argue that the "output," *i.e.*, the 3-D structure of "RRF," is dependent upon the data of Table 8, so is the audible or visual "output" of a music or literary composition stored on a machine-readable medium, which, according to MPEP 2106, is also non-functional descriptive material. Further, while applicant may argue that the claimed method recites method steps that go beyond *in silico* screening methods, *e.g.*, the method steps of claims 54 and 57, and that the protein used in the reference of Wilson et al. is ICE and not RRF. However, it is noted that the specification broadly and circularly defines an "RRF protein" as "an RRF protein having an enzyme activity in an ordinary state" (p. 13, bottom). Accordingly, the examiner maintains that the instant rejection is consistent with *Gulack* and the Table 8 data is non-functional descriptive material. Consequently, in view of the teachings of Wilson et al. and the Court's holding in *Gulack*, the claimed invention would have been obvious to one of ordinary skill in the art at the time of the invention.

According to applicant, converting a ketone to an alcohol using a reduction reaction is analogous to converting atomic coordinates into a 3-D protein structure. However, the analogy is not relevant because the atomic coordinates of Table 8 are "descriptive material" and one of ordinary skill in the art would not consider a ketone to

be "descriptive material." A ketone would be considered a composition and the atomic coordinates of Table 8 would not.

Applicant argues the use of a protein structure as defined by structural coordinates is patentable subject matter, citing three US Patents as evidence thereof.

Applicant's argument is not found persuasive. While the examiner acknowledges the cited US patents, applicant is respectfully reminded that each patent application is examined on its own merits according to the guidelines set forth by the USPTO as well as the MPEP.

Conclusion

[10] Status of the claims:

Claims 1 and 52-59 are pending.

Claims 1 and 52-59 are rejected.

No claim is in condition for allowance.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

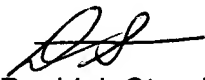
Any inquiry concerning this communication or earlier communications from the examiner should be directed to David J. Steadman whose telephone number is 571-

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272-0942. The examiner can normally be reached on Mon to Thurs, 6:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kathleen Kerr can be reached on 571-272-0931. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



David J. Steadman, Ph.D.
Primary Examiner
Art Unit 1656